Claims

1.   A scanning system for scanning an item being passed through a scan volume, comprising

a facet wheel containing a plurality of mirror facets and rotating about a rotational axis;

a beam generator comprising a light source generating a light beam along a path toward said facet wheel and a beam dithering mechanism for dithering said light beam being directed toward said facet wheel;

a detector for detecting return light reflecting off the item being scanned;

a collection lens for retrodirectively collecting said return light from said facet wheel and focusing said return light toward said detector,

wherein said beam generator being disposed in said collection lens.

2.   A scanning system according to Claim 1 wherein said light beam is dithered by said dithering mechanism over an angle in a plane parallel to said rotational axis of said facet wheel.

3.   A scanning system according to Claim 1 further comprising a controller for controlling operation of said beam dithering mechanism.

4.   A scanning system according to Claim 1 wherein said dithering mechanism dithers said light beam in a single dimension.

5.   A scanning system according to Claim 1 wherein said dithering mechanism dithers said light beam about two-dimensions.

6.   A scanning system for scanning an item being passed through a scan volume, comprising

a facet wheel containing a plurality of mirror facets and rotating about a rotational axis;

a light source generating a light beam along a path toward said facet wheel;

a beam dithering mirror mechanism disposed between said light source and said facet wheel for dithering said light beam over an angle in a plane parallel to said rotational axis of said facet wheel;

a detector for detecting return light reflecting off the item being scanned;

a collecting lens for retrodirectively collecting said return light from said facet wheel and focusing said return light toward said detector;

a beam redirector positioned between said detector and said collection lens for redirecting said return light focused by said collection lens which is focused off-axis from said detector due to dithering said light beam.

7.   A scanning system according to Claim 6 wherein said light source and said beam dithering mechanism together comprising a beam generator unit, wherein said collecting element comprising a collection lens, and wherein said beam generator unit being disposed in said collection lens.

8.   A scanning system according to Claim 6 wherein said beam redirector comprises a conical element.

9.   A scanning system according to Claim 8 wherein said conical element is formed of transparent plastic material.

10.   A scanning system according to Claim 8 further comprising a band pass filter disposed on one end of said conical element.

11.   A method of scanning an item in a scan volume, comprising the steps of

generating a first reading beam along first path toward a rotating facet wheel;

dithering the first reading beam over an angle toward said facet wheel;

generating a first scan pattern by scanning the dithered first reading beam with said facet wheel across a plurality of pattern mirrors and into the scan volume;

collecting return light from the first reading beam retrodirectively off the facet wheel and focusing said return light toward a first detector.

12.   A method according to Claim 11 further comprising

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redirecting said return light back toward said detector that otherwise would have been off said first detector due to dithering of said first reading beam.

13.   A method according to Claim 12 wherein said step of redirecting said spot comprises positioning a conical reflection element between said detector and said collection lens.

14.   A method according to Claim 11 further comprising

collecting said return light with a first collection lens;

dithering said first reading beam with a dithering mechanism,

wherein said first dithering mechanism being disposed in said first collection lens.

15.   A method according to Claim 11 further comprising

dithering said first reading beam over an angle in a single plane generally parallel to the rotational axis of said facet wheel.

16.   A method according to Claim 15 further comprising

generating a second reading beam along a second path toward said facet wheel;

dithering said second reading beam over an angle in a plane generally parallel to the rotational axis of said facet wheel;

generating a second scan pattern by scanning the dithered second reading beam with the facet wheel across a plurality of pattern mirrors and into the scan volume;

collecting return light retrodirectively off the facet wheel and focusing said return light to a spot toward a second detector.

17.   A method according to Claim 16 further comprising

forming said first and second reading beams by generating a laser beam and splitting said laser beam into said first reading beam and said second reading beam.

18.   A method according to Claim 11 further comprising

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generating said first reading beam with a first laser source and generating a second reading beam with a second laser source;

dithering said second reading beam over an angle toward said facet wheel;

generating a second scan pattern by scanning the dithered second reading beam with said facet wheel across a plurality of pattern mirrors and into the scan volume;

collecting return light retrodirectively off said facet wheel and focusing said return light from said second reading beam toward a second detector.

19.   A method according to Claim 18 further comprising

processing return signal from said first detector along a first processing channel to produce a first data stream and processing return signal from said second detector along a second channel to produce a second data stream;

combining said first and second data streams in a common processor.

20.   A method according to Claim 18 further comprising

providing a scanner housing with a first window disposed generally horizontally and a second window disposed generally vertically and passing scan lines through both said first window and said second window.